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Leukaemia Section

Short Communication

t(1;14)(p35;q32) LAPTM5/IGH

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Abstract

Review on t(1;14)(p35;q32), with data on clinics, and the genes involved.

Keywords

Chromosome 1; chromosome 14; LAPTM5; IGH; Mature B-cell neoplasms

Clinics and pathology

Disease

Mature B-cell neoplasms

Epidemiology

A t(1;14)(p35;q32) LAPTM5/IGH was found in a multiple myeloma cell line (Hayami et al., 2003). Two other cases of t(1;14)(p35;q32), but without gene assessment were described: a male patient, with Binet stage 1 chronic lymphocytic leukemia (CLL), and with mutated NOTCH1 (Giudice et al., 2018), and a female aged 55-year old female patient with follicular lymphoma (Slavutsky et al., 1987).

Genetics

To be noted is that a PHC2 (1p35.1) / HSP90AA1 (14q32.31) fusion was found in prostate cancer (Yoshihara et al., 2015) and a PPP2R5C (14q32.31) / CCDC28B (1p35.2) fusion in hepatocellular carcinoma (Hu et al., 2018), data extracted from http://atlasgeneticsoncology.org/Bands/1p35.html.

Genes involved and proteins

LAPTM5 (lysosomal protein transmembrane 5)

Location

1p35.2

Protein

262 amino acids, contains 5 trans-membrane helices. Membrane protein that localizes to intracellular vesicles, lysosomes in particular. LAPTM5 may play an important role as a negative regulator of T cell or B cell receptor-mediated signaling.

Overexpression of LAPTM5 induces lysosomal cell death. LAPTM5 transcription is often decreased in various types of cancer cell lines, in non-small cell lung cancer and esophageal squamous cell carcinoma tumors.

Low expression is associated with poor prognosis. LAPTM5 functions as a tumor suppressor (Nuylan et al., 2016).

IGH (Immunoglobulin Heavy)

Location

14q32.33

Result of the chromosomal anomaly

Hybrid gene

Description

The rearrangement occurred between the switch region of IGH and the first intron of LAPTM5. LAPTM5 was interrupted within its coding region and was not expressed (Hayami et al., 2003).

Fusion protein

Oncogenesis

Inactivation of LAPTM5

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